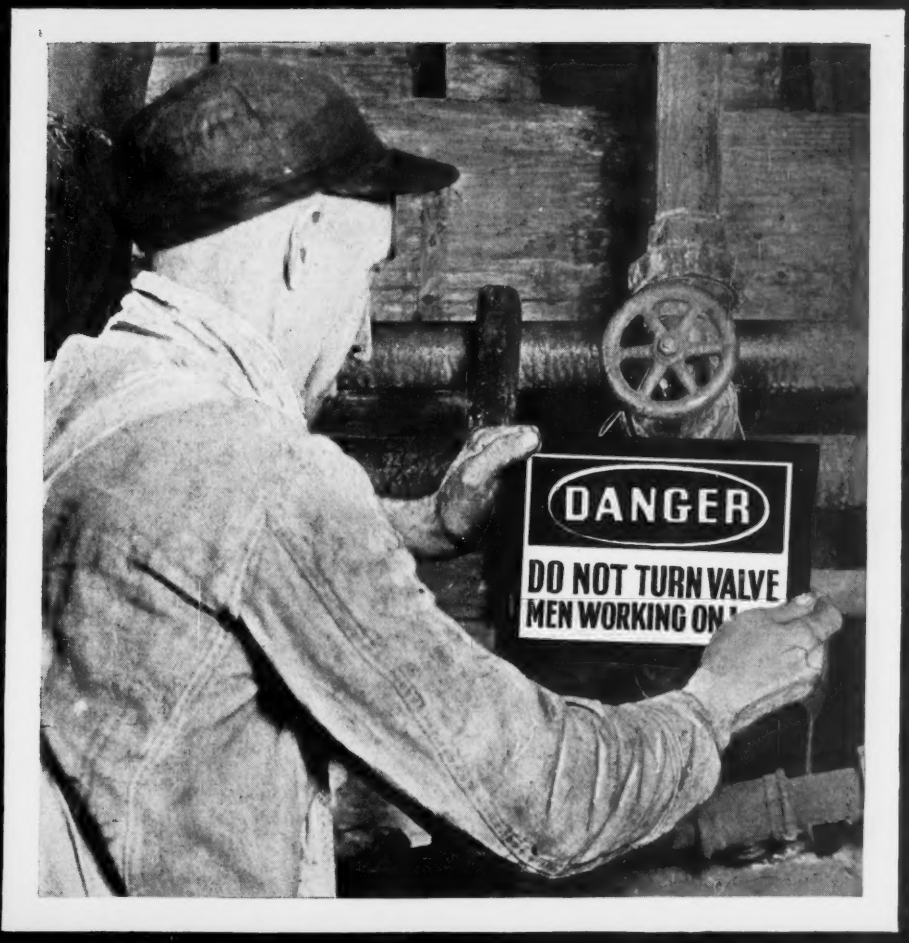
Industrial Standardization

and Commercial Standards Monthly



WHEREAS, The American Standards Association has adopted an abbreviated procedure for issuing desirable Defense Emergency Standards, reducing the customary time-consuming formalities to a minimum, and

WHEREAS, This procedure provides that such standards shall be immediately reviewed by the regular procedure of the Association, after the Defense Emergency shall have passed; now therefore be it

RESOLVED, That the Manufacturers Standardization Society of the Valve and Fittings Industry wishes to express its hearty approval of this abbreviated procedure, and also wishes to commend the American Standards Association for its prompt action in this matter.

—Resolution passed by the Executive Committee of the Manufacturers Standardization Society of the Valve and Fittings Industry.

Similar resolutions have also been passed by the Valve Manufacturers Association and the Pipe Fittings Manufacturers Association.

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And Commercial Standards Monthly

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RUTH E. MASON, Editor

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ASA

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Standardization is dynamic, not static. It means not to stand still, but to move forward together.

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March, 1941 Vol. 12, No. 3

Photographic Equipment Standards on Trial—

Proposed criteria for printing and projection equipment are expected to help improve photographic results

by Oscar W. Richards

Chairman, Subcommittee 7, ASA Sectional Committee on Standardization in the Field of Photography

HOW can standards help in controlling the quality of picture-taking, development, and printing? That is the question which an ASA Committee on Standardization in the Field of Photography and nine subcommittees working under it are now attempting to answer.

The first step toward the answer was taken in December 1940 when the work of the subcommittee on sensitivity to radiant energy (No. 2) resulted in publication of a proposed standard method for determining speeds of sensitive materials.

The second step has now been completed by subcommittee 7 with the publication of five proposed standards covering contact printing equipment and projectors which are expected to establish criteria of excellence for this type of equipment. This subcommittee has also nearly completed standards for projection printers, and expects to cover the rest of its field as rapidly as possible.

It has been the purpose of the subcommittee on printing and projection equipment (No. 7) to set up standards which can be depended upon to give uniform results, which can be met by any reputable manufacturer, and which in addition will aid and stimulate improvement in photographic equipment.

Criticism Is Invited

All five of the new proposed standards have been issued for a year of trial before they are considered for final approval. Within that time it should be possible to determine whether the standards are adequate and to obtain the best numerical values for use in the quantitative items, such as temperature limits, illumination, sizes, etc. The values used in the proposed standards are, in the judgment of the subcommittee, the best available, but any additional information or constructive criticism will be carefully considered before the final standards are established. All concerned are invited to send such information to the chairman of the subcommittee.

The following comments indicate the nature and spirit of the proposed standards. Obviously they do not apply to toy and inexpensive equipment. The limitations in size in the new proposed standards will permit more efficient design and manufacture which will give the consumer a better instrument. Any attempt to limit improvement and new design has been carefully avoided. The testing methods will permit rating of instruments for temperature and illumination, will encourage the purchase of better instruments, and will permit the purchaser to know that with proper use the instrument he is buying is not likely to damage valuable films and slides. Much of the field covered is new and there is little generally recognized best practice to guide standardization. With the information and help we expect from those who use the proposed standards during the trial year, we will develop more acceptable standards for the instruments and materials in this branch of photography.

Proposed American Standard for Printing Equipment (Contact Printing Machines, Printing Frames, and Masks (Z38.7.1).—This proposed standard provides that printing machines and frames for a nominal size should accommodate all material of that size including film pack, cut film, and roll film negatives. Tests required to put this standard into effect are provided in the Proposed American Standard Methods of Testing

Printing and Projection Equipment (Z38.7.5), including a test for uniformity of contact between negative and positive printing equipment.

Printing equipment with built-in illumination should not become too hot, and this proposed standard provides temperature limits and requires that the temperature be measured according to the methods provided in the proposed standard testing methods (Z38.7.5).

Requirements for squareness, thickness of masking blades, and mask sizes given in the proposed new standard represent good commercial practice.

Proposed American Standard for Projection Equipment (Film Strip Projectors, Viewing Devices for 35-mm Film and Reading Devices for Microfilm) (Z38.7.2).—The spacing and arrangement of pictures in this proposed standard reflects present practice and are in close agreement with the standards of England and Germany. A testing method for measuring illumination is given and tolerances for screen illumination which includes lumen output, center-to-corner ratio of illumination, and uneven lighting. Beyond the sizes of aperture and the arrangement of the pictures on standard 35-mm film, further dimensional standardization seems premature, the subcommittee believes. The last two items of the standard insure minimum wear of the film by the projector. The committee is indebted to B. J. Kleerup of the Society for Visual Education, Chicago, for generous assistance with the part of the program on projectors.

Viewing Devices for 35-mm Film have only been in existence for a few years and the committee considers it premature to establish detailed standards at this time. It calls attention, however, in this proposal to elementary standards of excellence which should be achieved in any successful design.

As yet there is little agreement on reading devices for microfilm. Some systems use 35-mm motion picture film with double-frame size of negative, others use 16 mm. Some use perforated film and others unperforated or perforated along one side only. Final standards will probably resemble those for projectors.

Proposed American Standard for Lantern Slide Projectors (exclusive of Microfilm Readers) (Z38.7.3).—This proposed standard establishes

Members of Subcommittee 7 which developed the five new proposed standards for photographic printing and projection equipment and methods of test represent scientific groups using photographs as part of their organization work, as well as makers of photographic equipment. They are:

Oscar W. Richards, Spencer Lens Company, *Chairman*
F. M. Bishop, Eastman Kodak Company
Gustav Fassin, International Industries, Inc.
C. W. Gartlein, Cornell University
U. O. Hutton, Cambridge Instrument Company
J. H. Leicht, Electrical Testing Laboratories
O. M. Miller, American Geographical Society
W. B. Rayton, Bausch & Lomb Optical Company
O. S. Reading, U. S. Coast and Geodetic Survey
V. E. Whitman, Folmer Graflex Corporation

The subcommittee invites any one concerned to send in comments about the proposed standards at any time during the year of trial use. All suggestions will be considered by the subcommittee before the proposals are finally completed and submitted for approval by the American Standards Association.

Copies of the five new proposed standards are available from the American Standards Association at 10 cents each. The proposed standard for determining speed of film is 25 cents.

Nine subcommittees of the ASA Sectional Committee on Standardization in the Field of Photography (Z38) are working on standards for different phases of photography:

1. Physical dimensions of sensitive materials
2. Sensitivity to radiant energy
3. Supports for sensitive coatings
4. Exposing equipment
5. Photographic characteristics of illuminants
6. Processing equipment
7. Printing and projection equipment
8. Processing
9. Definitions; abbreviations and symbols

The Optical Society of America has the administrative leadership for the work of the committee, with Loyd A. Jones as chairman, and J. W. McNair of the American Standards Association as secretary.

In addition to photographic printing and projection equipment, reading devices for microfilm, such as the one shown here, are included in the standards being developed by Subcommittee 7. More work is to be done on these standards.

Courtesy New York Public Library.

the overall maximum size and the maximum area of the slide to be projected, which makes possible the manufacture of slide carriers of appropriate size. The area limitation cannot prevent any individual making his picture to the binding tape; but it endeavors to stimulate reasonable slide making and gives a definite limit for the manufacturer to use in design. This limitation is of value to the user as nearly all the light will then be passed through the aperture and brighter and sharper pictures will appear on the screen. For miniature sizes, adding a small amount to each side greatly increases the area to be projected and therefore reduces the available light per unit area. The sizes for standard and for miniature standard lantern slides include the best present American practice and are very close to the sizes used abroad.

Test Methods Proposed

The test methods proposed may be used for permissible temperature of the material projected, for the lumen output and evenness of screen illumination. Focal lengths for projection lenses are recommended. The subcommittee considered standardizing the outside diameters of the projection lenses, but as only two manufacturers were willing to cooperate with the subcommittee such standardization is not possible at present.

Provision is made in the proposed standard for an intermediate standard slide of 2.5 by 2.5 inches outside dimensions. Should demand for this size develop, the aperture and other dimensions will be definite and will be provided.

Proposed American Standard for Opaque Projectors for Written or Printed Matter and Pictures (Z38.7.4).—Size, focal lengths of projection lenses, adequate focusing range, illumination, and temperature are recommended in this proposed standard. These items follow existing practice and Government buying specifications.

Proposed American Standard for Testing Printing and Projection Equipment (Z38.7.5).—This outlines a proposed test for uniformity of contact between negative and positive printing equipment, methods of measuring film or slide temperature, and of lumen output. A testing method using the familiar 120-dot halftone screen is proposed for testing the evenness of contact and the allowable departure from evenness. To measure the temperature as required in the Proposed American Standard for Contact Printing Equipment, a thermocouple method is proposed with sufficient detail that proper precision may be obtained yet no very expensive or delicate measuring equipment is required. It is difficult to measure temperature, and an ordinary thermometer is unsatisfactory and its use may be misleading. The same testing method will be used for projection equipment.

S. Bruce Black Is New Member Of ASA Board of Directors

Breer, Parker, and Strauss are re-elected for three years

S. BRUCE BLACK, president of the Liberty Mutual Insurance Company, has been elected new member of the Board of Directors of the American Standards Association representing the National Association of Mutual Casualty Companies. In addition, the Board re-elected three members whose terms expired December 31: Carl Breer, executive engineer of the Chrysler Corporation, representing the Automobile Manufacturers Association; John C. Parker, vice-president, Consolidated Edison Company of New York, representing the Electric Light and Power Group; and Jerome Strauss, vice-president, Vanadium Corporation of America, representing the American Society for Testing Materials. All four will hold office until December 31, 1943.

Mr. Black has been associated with insurance throughout his entire business life. He has been particularly interested in industrial safety and workmen's compensation insurance, his interest dating from the beginning of workmen's compensation in this country. After his graduation from the University of Wisconsin he became a statistician with the Industrial Commission of Wisconsin. In 1915 he left the Commission and from 1915-1917 was statistician and actuary of the American Mutual Liability Insurance Company of Boston. He joined the Liberty Mutual Insurance Company as its treasurer in 1917, and became successively vice-president, vice-president and general manager, and president, which position he has held since 1924. In this connection he still continues his interest in workmen's compensation since this type of insurance is the company's principal line of business, with automobile insurance second in importance.

Holds Other Offices

In addition to his connection with Liberty Mutual, Mr. Black is also vice-president and general manager and director of the United Mutual Fire Insurance Company; director and member of the executive committee of the Boston Manufacturers Mutual Fire Insurance Company; director and member of the executive committee of the Mutual Boiler Insurance Company of Boston; director and member of the executive committee, Paper Mill Mutual Insurance Company; director and former chairman of the American Mutual Alliance; director and former president of the National Association of Mutual Casualty Companies; director and president, National Association of Mutual Automotive Insurance Companies; director of the Massachusetts Safety Council; and fellow and charter member of the Casualty Actuarial Society.

S. Bruce Black

Mr. Breer has been in charge of the Chrysler Engineering Research Laboratories since the Chrysler Corporation was founded. He is also vice-president of the Chrysler Institute of Engineering and of Airtemp, Inc., an air-conditioning subsidiary of the Chrysler Corporation. He was a co-designer of the first Chrysler automobile built in 1924, and with his partners, Fred M. Zeder and Owen R. Skelton, has been responsible for the development of such important automotive engineering improvements as hydraulic brakes, floating power, distribution of weight,

modern streamlining, high compression engines, and many other features. In addition to the Automobile Manufacturers Association, Mr. Breer is a member of several other organizations which have close contact with the American Standards Association, including the Society of Automotive Engineers and the American Society of Mechanical Engineers.

John C. Parker, vice-president of the Consolidated Edison Company of New York, also re-elected to the ASA Board for a three-year term ending December 31, 1943, has been concerned with the work of the American Standards Association for many years. He first became a member of the Board in 1932, and before that time had been a member of the Standards Council from 1926 to 1932, serving as vice-chairman in 1931. He represents the ASA Electric Light and Power Group.

Jerome Strauss, vice-president of the Vanadium Corporation of America, has been a member of the ASA Board for the past year, completing the unexpired term of Dr. G. W. Thompson. He was nominated by the American Society for Testing Materials. Mr. Strauss has long been interested in standardization, particularly in connection with ferrous and non-ferrous metals, and has taken an active part in the ASTM program.

Argentine Committee Issues Spanish Edition Of Electrotechnical Vocabulary

The Argentine Electrotechnical Committee has notified the American Standards Association that it has completed a Spanish version of the six-language International Electrotechnical Vocabulary so much in demand by manufacturers and purchasers of electrical equipment. This book contains a study of the scientific and industrial terms used in the various branches of electrotechnics. The Spanish version maintains the foreign idioms and numerical order exactly as in the original but instead of being in English and French, the definitions are now in Spanish.

The book is divided into a number of sections, the first of which covers fundamental and general definitions of electrical terms. The other sections deal specifically with: machines and transformers; switchgear and control gear; apparatus for scientific and industrial measurements; generation, transmission, distribution; electrical traction; power applications; thermic applications; lighting; electro-chemistry; telegraphy, telephony; radiology; and electro-biology.

The definitions are given in Spanish only, but a translation of the terms alone is also given in German, Italian, French, English, and Esperanto.

The original book is the result of many years of continuous labor on the part of a committee of experts from Austria, France, Germany, Great Britain, Italy, the Netherlands, Poland, Spain, and the United States. The first printing was approved by the International Electrotechnical Commission at its meetings in Torquay in June 1938.

The South American market is becoming more and more interested in standards as a basis of purchase. The Argentine Electrotechnical Committee, translator of the Spanish edition, has been operating for some time.

Copies of the Spanish translation of the six-language International Electrotechnical Vocabulary (302 bound pages), at $2.50 per copy, may be ordered from the American Standards Association, 29 West 39th Street, New York, N. Y. The ASA is serving as a clearing house for the Argentine Electrotechnical Committee in this matter, and consequently there will be some delay in delivery of the books while orders are being filled from Argentina.

Draft Standards from Australia, Great Britain, and New Zealand

The Library of the American Standards Association has just received copies of draft standards from the standardizing bodies of Australia, Great Britain, and New Zealand, as follows:

Australia

Charcoal Gas Producers for Motor Vehicles together with Standard Rules for the Testing of Charcoal Gas Producers for Motor Vehicles (To be No. ED 3001)

Great Britain

Silver Solder, Grades A, B, and C (CF NF 7144, Draft Revision of No. 206)

Notes for Guidance in Specifying the Carrying Out of a Bend Test (CF ME 7164)

Dimensions of Drilling Jig Bushes (CF MF 7186)

Cast Iron Columns for Street Lighting (CF IS 7189)

New Zealand

Regenerated Lubricating Oil (D1416—Second Proof Issue)

Pumice Sandsoap (D1423)

Members of the American Standards Association may borrow copies of draft standards from the ASA Library.

How Argentina Develops Its National Standards

THE Instituto Argentino de Racionalizatión de Materiales—IRAM (Argentine Institute of Standardization of Materials) is a civil entity, with legal status, organized in the Argentine Republic with the object of establishing standards for materials, their applications, and uses. Its membership comprises official and private entities and personal members interested in this work.

Among the outstanding stipulations of IRAM's statutes the following are worthy of comment:

1. Its members are grouped in three divisions representing, respectively, (*a*) scientific or general interest, (*b*) industry, and (*c*) consumers.

2. One of its objects is to work for improvement and coordination of existing laboratories and the creation of new laboratories for studying and investigating materials.

3. The "Directing Council" is composed of 18 members with six alternate members, six and two, respectively, corresponding to each of the three membership divisions mentioned.

4. In the procedure to be followed for the adoption of standards it is established that the respective committees must be made up of representatives of the divisions *a*, *b*, and *c*, in such a way as to give *an even balance between the representation of consumers and producers.*

5. All Standards are first approved provisionally and remain as provisional during a long trial period. They are given publicity in the official organ *Informaciones—IRAM* and any observations made are carefully considered by the Institute.

Similarity between the methods used by the American Standards Association and those of the Argentine Institute of Standardization of Materials (Instituto Argentino de Racionalizacion de Materiales) are evident in a description of the Argentine association published in the *ASTM Bulletin*, January, 1941.

The article was prepared by Ing. Marcelino A. Ceriale, Director General of IRAM to whose vision, organizing ability, and energetic efforts its existence and development have been largely due.

Ing. Ceriale is a graduate in mechanical and electrical engineering of the National University of La Plata, and after being connected with several electric power enterprises, entered the service of the Argentine State Railways of which he became Chief Inspector of Materials and Specifications, directing the studies of standardization for the Railway Administration.

His experience in this work led him to study the possibility of extending the benefits of standardization of materials to all national departments, and in May, 1935, IRAM was founded with Mr. Ceriale as its president. Under his administration the Institute's work became of great importance and of international aspect.

The activities of Mr. Ceriale and the Institute have become well known in technical, economic, and university circles by his writings and lectures and the discussions which took place at the First South American Engineering Congress in Santiago, Chile, in 1939 stimulated interest in standardization in many of the countries of South America.

The Argentine Government gave official recognition to IRAM's work by creating in 1937 the National Standardizing Commission (Comision Nacional de Uniformacion de Materiales) of which Ing. Ceriale was named General Secretary.

The principal similarity between the methods used by the American Standards Association and the Argentine Institute of Standardization of Materials lies in the classification of representation on standardization committees to provide an even balance between consumers and producers.

The first step in the consideration of a Standard consists of the preparation of a "summary of antecedents" (Planilla de entecedentes) in which a résumé is given of corresponding standards of other countries, studies which have already been made of the subject in Argentina, existing official specifications, publications applying to the subject, a glossary of pertinent technical terms, special notations that may apply, etc. With this in mind IRAM maintains a library containing an up-to-date set of the standards published by the most important countries, this being the most complete collection of standards in the Argentine Republic and probably in South America.

This "summary of antecedents" passes then to a specialized subcommittee which studies the matter and prepares a draft of the proposed standard which is then referred to the respective committee which has been named to handle this standard. This committee discusses and modifies the draft if it considers this advisable and this draft is then referred to the Committee on Nomenclature, Symbols and Coordination whose duty it is to assure that the standard complies with IRAM's general requirements as laid down in its "Standard for Standards."

Subsequently the project is referred to the General Standards Committee which brings together and checks the work of all of the various committees that have intervened in the preparation of the standard and then passes the finished "Projected Standard" on to the Directing Council of the Institute. The Council considers it and if approved issues it as a "Proposed IRAM Standard" under which form it is transmitted to the National Commission for Standardizing Materials, the governmental agency which finally gives official status to IRAM's work.

Briefly then the successive steps through which a Standard passes are: Preliminary Plan; Draft; Projected Standard; Proposed IRAM Standard; Official IRAM Standard.

Work Done by IRAM

Up to the present some fifty standards-committees and subcommittees have been formed involving participation by some 500 technicians, principally graduate engineers, chemists, and architects, who have spontaneously given their collaboration to the study and preparation of IRAM standards. Twenty-five standards have already been approved, 22 of these have been published and 95 additional standards are now under study.

Position of IRAM in Argentina

Recognizing the advantages from the standardization of materials, the National Government by a decree of December 14, 1937, created the National Standardizing Commission (Comision Nacional de Uniformación de Materiales) with the object of giving official approval to IRAM standards and seeing that they are followed. The Ministries and principal Government Departments, the universities, and also certain private entities especially authorized by the Government are represented on the National Commission. Its relation with IRAM is set forth in Article 4 of the decree as follows:

"The National Standardizing Commission will make use of the Argentine Standardizing Institute —IRAM—as the centralizing body for technical and scientific studies of standards in order to maintain uniformity of methods and ideas.

"Any other entity now existing or which may be formed in the future for the study of standardization must refer any standards which they may draw up to the National Standardization Commission which will, after a due study and report has been made by IRAM, put them into effect if considered advisable."

This gives official ratification to IRAM's work with a corresponding increase in influence and results. Argentina thus has in IRAM a technical organization for preparing its standards and in the National Commission an official body whose duty it is to see that IRAM's technical work does not affect adversely the country's national and international interests. As a result an IRAM standard not only takes into account technical and scientific considerations, but also those of public interest, and this should enable Argentina to issue the best possible standards.

Industry Approves Recommended List of Paper Sizes

A revision of Simplified Practice Recommendation, R22-33, for Paper has been given the required degree of acceptance by the industry and became effective December 31, 1940, the Division of Simplified Practice of the National Bureau of Standards announces.

The revision represents the results of studies of present requirements in the paper-using trades, and differs from the previous edition in that the broad classes of paper have been subdivided in those cases where the sizes of papers of different substance or finish are not the same throughout the class. In addition, the scope of the program has been enlarged to cover loose-leaf and machine-posting ledgers.

Until printed copies are available, free mimeographed copies of this Simplified Practice Recommendation may be obtained from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

Courtesy Nat. Safety Council

Our front cover shows a "Danger" sign as specified in the new American Standard. *Left*—Danger sign before standardization.

New American Standard proposes uniform colors and wording to increase effect of industrial accident-prevention signs

by Mark Bulot[1]

Chairman, ASA Sectional Committee on Specifications for Industrial Accident Prevention Signs

Standard Safety Signs To Help Prevent Injury

IT may seem strange that industrial accident prevention signs, one of the first safety devices, should have been in use for such a long period of time before definite recommended standards were approved. The answer is obvious, however, when a little thought is given. Signs, like many things that are used successfully for a long time, were simply taken for granted.

Nearly every company uses safety signs in some form or other, but very few of them realize to just what extent. Quite often a plant manager, when asked if he uses many accident prevention or safety signs will answer, "Well, we use a few." However, a check will usually reveal a lot of signs in use. Nevertheless, the plant manager's reply may have been a perfectly natural one, for signs, in spite of the fact they shout various warnings, do not shout about the injuries or accidents prevented because of their use.

They are truly the silent sentinals of safety. When a pair of goggles is smashed, the worker is mighty glad he had them on at the time—very probably the goggles saved his eyes. Yet, a sign warning against performing the operation without goggles or giving instructions that goggles must be worn may have been the original preventor of the injury. A guard may be in place because of a sign telling it should be, yet the guard usually receives all the credit for preventing the injury.

There are, of course, many other illustrations that could be given to show the definite place accident prevention signs have in any well-rounded safety program. Just look around almost any plant, and you will be amazed at the number of safety signs in use.

The realization that certain colors and certain

[1] Safety Director, Stonehouse Signs, Inc.

designs for safety signs are more efficient than others is not new. C. M. Hansen in his handbook, *Universal Safety Standards*, published in 1913, states that danger signs should have the word DANGER in white on a red field and that safety signs should be in white on a green field. Also, the following paragraph taken from *Signs and Slogans*, a booklet published by the Independence Inspection Bureau in 1914, shows some of the early attention given to signs:

"You can't always apply mechanical safeguards. Nor can you be present always to caution men of danger. Signs will help you. Use substantial signs—place them properly —and maintain them in good condition."

Other early publications on safety procedures mention signs and their use. These include publications such as *The Prevention of Industrial Accidents*, published in 1909 by the Fidelity and Casualty Company; *Woodworking Safeguards*, by David Van Schaack, published in 1911 by the Aetna Life Insurance Company; *Prevention of Railroad Accidents*, by George Bradshaw, published in 1912; *Live Articles on Industrial Safeguards*, published in 1912. Yes, accident prevention signs have been a natural part of safety programs since the start of such programs by industry.

Early in 1937 the National Safety Council, realizing the need for standard specifications for industrial accident prevention signs, sponsored such a project through the American Standards Association. The scope of this project was as follows:

"These specifications apply to design, application, and use of signs or symbols, intended to indicate and insofar as possible, to define specific hazards of a nature such that failure to designate them may lead to accidental injury to workers, or the public, or both."

In accordance with the procedures of the American Standards Association, a sectional committee was asked to serve, a subcommittee appointed, and the project was under way.

No Simple Task

It was remarkable how many members of the committee, at the start, thought it would be a comparatively simple task. This thought wasn't very long lived, however, and it was not uncommon to hear members say they never before realized how much there was to signs or how important they were and could be to safety. The interest shown by the entire sectional committee was indeed inspiring to the subcommittee. Helpful and constructive comments and suggestions were plentiful as the various drafts were prepared and distributed. Special credit for their regular attendance at all meetings and their valuable work in the formation of these specifications should go to the following members of the subcommittee: E. R. Granniss, Director Industrial Division, National Conservation Bureau; George Burns, Assistant Director, Industrial Division, National Safety Council; R. McA. Keown, Engineer, Wisconsin Industrial Commission; O. M. Nanfeldt, Assistant Superintendent of Engineering, Zurich General Accident and Liability Insurance Co.; H. E. Willson, Engineer, Building Plans, Western Electric Company. In addition, much worthwhile help was contributed by R. P. Blake, Senior Safety Engineer, Division of Labor Standards, U.S. Dept. of Labor; and W. R. Smith, Safety Engineer, Public Service and Gas Company, who were also members of the subcommittee.

It was soon realized that the specifications for industrial accident prevention signs should not be written to cover all the various uses of signs in a broad sense. Such a procedure could not help but produce an unwieldy document that might be hard to understand, difficult to follow, and likely through its own weight to defeat its purpose. It was decided that the main object was to provide simple classifications to cover the necessary sign groups so that uniformity of sign designs and colors for certain purposes could be maintained. The final result was five groups of signs as follows:

Danger signs—color red—to warn of specific dangers only. Danger signs shall have a white background covering the face of the sign. The word "Danger" shall appear in white letters on a red oval. The red oval should be placed inside a black rectangular panel with a white line separating the outside edge of the red oval from the adjacent edge of the black panel. The sign wording should be in black on the white background.

Caution signs—color yellow—to warn of possible

dangers or unsafe practices. Caution signs shall have a yellow background covering the face of the sign. The word "Caution" shall appear in yellow letters on a black rectangular panel. The sign wording should be in black on the yellow background.

Safety instruction signs—color green—to provide information relating to general safe practices. Safety instruction signs should have a white background covering the face of the sign. If words such as "Think" or "Be Careful" are used, they should be in white letters on a green rectangular panel. The sign wording should be in black on the white background.

Directional signs—color black—to indicate the way to stairways, fire escapes, exits, and other locations. Directional signs should have a white background covering the face of the sign. The arrow pointing out the direction should be in white on a black rectangular panel. Any wording in or below the panel should be in black on the white background.

Informational signs—may be in any of a variety of designs and colors except that neither red nor yellow shall be used. To carry messages of a general nature, such as rules, regulations, and markers, when such postings do not conflict with Danger or Caution purposes.

These classifications, while seemingly of a general nature, are specific in purpose. The two main classifications are danger signs and caution signs. These two groups are intended for use wherever an immediate hazard exists, or where it is deemed advisable to warn against potential hazards or to caution against unsafe practices. All danger or caution signs should be selected with care. They should be posted so as to be legible to those who are to be warned of the danger or unsafe practice. They should be immediately removed whenever the danger or potential hazard they warn against no longer exists. Such practice is important in order to maintain the proper respect for signs and their messages.

Classifications May Be Subdivided

It is not intended that the five classifications may not be further subdivided by individual companies, if they so desire, as long as any such subclassifications do not conflict with the principles of these specifications. In fact, such a procedure might be advisable, particularly by large organizations having a number of plants. The safety engineers of such companies know the various operations necessary. They know the specific and potential hazards involved. They can set up regulations stating where danger and caution signs should be used, what sizes such signs should be for certain types of warnings, and what wordings or messages such signs should contain. Likewise, regulations can be prepared covering the various types of safety instruction, directional, and informational signs that could be used to advantage.

Many subclassifications could be listed without conflicting with the standard specifications. There are, of course, a number of ways this could be done. For example, some companies might find it practicable to divide their hazards into various topic groups and provide regulations stating the types of signs to be used for certain machine-shop operations, handling material operations, etc. Others might find it more practicable to list a number of signs in each of the sign classifications and state when and where such signs should be used.

Applies to New Signs and Replacements

The approval of the Specifications for Industrial Accident Prevention Signs does not mean that all signs in use should be replaced immediately with standard signs. It is hoped, however, that all new signs and replacements of old signs will be designed and constructed in accordance with these specifications. Thus, in the course of time, the accident prevention signs used by all

industries will be the same, and workers will be better guided, as no matter where they work they will be confronted with familiar signs that have definite meanings.

Other items closely allied to signs, such as tags, portable tripods, flare pots, danger flags, and other devices used in lieu of signs, were considered by the committee and will be acted upon at a future date. Both the sectional committee and the subcommittee have been requested to remain active to study these items and either include them as a part of the Sign Specifications, as a revision, or incorporate them in separate specifications. Any suggestions or recommendations relative to these items will be welcomed by the committee and should be sent to the American Standards Association or to E. R. Granniss, Secretary, ASA Sectional Committee, Specifications for Industrial Accident Prevention Signs, care of National Conservation Bureau, 60 John Street, New York City.

Railway Engineering Committees Recommend Changes in Standards

Among the committees reporting on their work at the annual convention of the American Engineering Railway Association at Chicago, March 11, 12, and 13, are those on wood bridges and trestles, masonry, and iron and steel structures.

The committee on wood bridges and trestles has reviewed the latest edition of the American lumber standards, Simplified Practice Recommendation R16-39, issued by the National Bureau of Standards in 1939. The committee approved the revisions and is recommending withdrawal of the AREA specifications for wood shingles, and revision of the specifications for structural timbers to bring the *AREA Manual* into line with SPR R16-39. The Simplified Practice Recommendation and the American Standard for structural timbers (ASA 07-1939, ASTM D 245-37) are in agreement in their technical requirements. This committee is also presenting specifications for the design of wood bridges and trestles for a trial period.

Masonry Committee Suggests Change

The Committee on Masonry is presenting certain changes covering references to other standards, mainly ASTM standards, to keep the *Manual* current with the work of other organizations. This committee is also recommending changes in sections of the *Manual* relating to the design of columns to conform to appropriate sections in the Report of the Joint Committee on Standard Specifications for Concrete and Reinforced Concrete. Proposed specifications for lining railway trestles with metal liner plates and shotcrete are presented as information. The committee is also recommending, for adoption and inclusion in the *Manual*, specifications for the placement of concrete culvert pipe that were presented as information in 1940. Recommendations are also being presented for incorporating in the *Manual* specifications for depositing of concrete under water.

The Committee on Iron and Steel Structures is presenting minor revisions of those sections in the *Manual* on specifications for steel railway bridges. This committee has also prepared detailed instructions for maintenance inspection of steel bridges recommending that the new recommendations be included in the *Manual* in place of older recommendations.

Complete reports of these committees are contained in the *AREA Bulletin*, Volume 42, Number 422, January, 1941.

Reprint Scrap Recommendation To Meet Defense Demands

Sustained demand for the Simplified Practice Recommendation for Classification of Iron and Steel Scrap because of its relation to the national defense program has necessitated reprinting and reissuing the recommendation, the Division of Simplified Practice, National Bureau of Standards, announces.

The recommendation specifies classes of scrap for blast, basic open-hearth, acid open-hearth, and electric furnaces for gray iron foundry practice, Bessemer converters, and for miscellaneous scrap. A contract form for purchase of scrap is included in the recommendation.

In January, 1940, the recommendation was reaffirmed by the Standing Committee of the industry. It had been revised in 1928 and 1936 by the Committee.

Those wishing to procure a copy of Simplified Practice Recommendation for Classification of Iron and Steel Scrap, R 58-36, may do so from the Superintendent of Documents, Government Printing Office, Washington, D. C. The price is five cents a copy.

ASA Approves Revisions to Bring Steel-Pipe Standards Up-to-Date

Changes to bring two standards for steel pipe up-to-date were approved by the American Standards Association when it approved the revised American Standard Specifications for Welded and Seamless Steel Pipe (ASA B36.1-1940; ASTM A 53-40) and American Standard Specifications for Lap-Welded and Seamless Steel Pipe for High-Temperature Service (ASA B36.3-1940; ASTM A 106-40).

Changes in the first standard include a new section providing that each length of pipe shall be legibly marked by rolling, stamping, or stencilling to show the manufacturer's name or brand, the type of pipe, and the strength. Extra strong pipe is to be marked XS, and double-extra-strong is to be marked XXS. Pipe meeting the requirements of the standards is to be marked "ASTM A35". It is also to show the length, and the hydrostatic test pressure in pounds per square inch.

Other changes specify Grade A seamless pipe for close coiling, cold bending, or for forge welding rather than Grade B seamless. Grade B seamless replaces a reference to medium-carbon grade. The requirement for minimum tensile strength for Grade B is changed in Table 1 of this standard from 62,000 psi to 60,000 psi; and the yield point for Grade A pipe is changed from 26,500 psi to 30,000 psi.

In the standard specifications for lap-welded and seamless steel pipe for high-temperature service, all reference to a Grade C pipe is omitted, and the minimum tensile strength for Grade B pipe is changed from 62,000 psi to 60,000 psi. This revision also changes the requirement for the transverse tension tests to provide that elongation in two inches shall be 25 per cent for Grade A and 15 per cent for Grade B in place of the original requirement of 30 per cent for Grade A and 20 per cent for Grade B. It also provides that specimens cut from the ring section shall be flattened cold whereas formerly it had provided that they may be flattened hot.

A change in the maximum hydrostatic test pressure provides that this pressure shall not exceed 2800 psi for all nominal sizes over 3 inches in place of the former provision of 4500 psi for sizes over 3 inches up to 8⅝ inches or 3,000 psi for all sizes 8⅝ inches and over.

A new note added in the present revision provides that when requested by the purchaser and so stated in the order pipe in sizes 14 inches in nominal diameter and smaller shall be tested to one and one-half times the specified working pressure (where this exceeds 2800 psi) under certain specified conditions.

Copies of these two standards are now available from the American Standards Association or the American Society for Testing Materials at 25 cents each.

ASA Considers Standards Program For Electric Household Appliances

Electrical household appliances—such as electric ranges and electric water heaters—may be included in a national standardization program if a project just recommended to the American Standards Association by the National Electrical Manufacturers Association is put into effect. NEMA suggests that American Standard definitions, methods of test, and standards for performance, durability, safety, rating, nameplate markings, and labeling for electric household ranges and water heaters should be developed under the sectional committee procedure of the American Standards Association.

"As the use of electric ranges has been increasing, we believe that the time has come to give consideration to the development of American Standards covering this device." NEMA declared in its letter requesting initiation of the project for ranges.

The ASA Advisory Committee on Ultimate Consumer Goods has recommended that the ASA undertake this work, and the recommendation is now being considered by the Electrical Standards Committee. Standard specifications and tests developed by a joint committee of the National Electrical Manufacturers Association and the Edison Electric Institute are being considered by the ASA in connection with the proposed new project.

SAA Issues Complete List Of Australian Standards

The American Standards Association has recently received several copies of the indexed list of publications, including a complete list of standards, published by the Standards Association of Australia. Any member of the American Standards Association may borrow the booklet from the ASA Library.

ASA Consumer Goods Committee Elects I. D. Wolf Chairman

The Advisory Committee on Ultimate Consumer Goods of the American Standards Association meeting February 25, in New York, elected Irwin D. Wolf, vice-president of the Kaufmann Department Stores, as new chairman of the committee. Mr. Wolf will succeed Max Gertz of B. Gertz, Inc., who has served as chairman of the committee for the past year.

Mr. Wolf is so well-known in retailing circles that his choice as chairman by the 15 national organizations represented on the ACUCG was unanimous. He has for several years headed the Vendor Relations Committee of the National Retail Dry Goods Association which is working for better relations between manufacturers and retailers. He is also active in the work of the American Management Association and is originator and donor of the Wolf Package Award given annually to stores and manufacturers for leadership in package design. Mr. Wolf's broad experience with retailer and consumer problems makes him particularly well qualified for the chairmanship of the Advisory Committee on Consumer Goods, which has for the past four years been working on a program of basic standards for goods sold at retail.

Courtesy Nat. Retail Dry Goods Assn.

Irwin D. Wolf

Organizations Represented on the ACUCG

American Association of Textile Chemists and Colorists
American Association of University Women
American Home Economics Association
American Hospital Association
American Society for Testing Materials
Consumers' Union of the United States, Inc.
National Association of Purchasing Agents
National Bureau of Standards, U. S. Department of Commerce
National Home Demonstration Council
National League of Women Voters
National Retail Dry Goods Association
U. S. Department of Agriculture, Bureau of Home Economics
U. S. Dept. of Agriculture, Consumer Standards Project, AAA
U. S. Dept. of Commerce, Bur. of Foreign and Domestic Commerce
U. S. Dept. of Labor, Bur. of Labor Statistics, Retail Price Division

New vice-chairman of the committee will be Mrs. Carol Hyatt Moffett. Mrs. Moffett is well-known as one of the authors of a series of purchasing pamphlets for the Household Finance Corporation. She has been a member of the Advisory Committee on Ultimate Consumer Goods since its organization and is also active in the work of the National Consumer-Retailer Council.

Among ASA committees presenting progress reports at the meeting were the committee on household refrigerators; the committee on sheets and sheeting; the committee developing standard sizes for children's garments and patterns; the committee developing standards for cleanliness and content of bedding and upholstery; and the committee working on standard definitions of terms used in retailing. There were also reports by subcommittees on shoes and hosiery.

The committee discussed several proposed projects—one on domestic electric flatirons, one on electric water heaters, and one on household electric ranges. Decision was made to recommend that the ASA go ahead on all three of these new projects.

New Foreign Standards Now Available for Loan

Copies of new and revised standards have recently been received from the countries listed below. Members of the American Standards Association may borrow the standards from the ASA Library. When copies are requested, the symbol number and the title should both be given.

Australia

Steel Tubes for Boilers and Unfired Pressure Vessels (B18, 19, and 64-1940)
Wrought Iron Tubes for Boilers and Unfired Pressure Vessels (B20 and 76-1940)
Plugs and Plug-Sockets—Type A, Plugs with Male Contacts, Sockets with Female Contacts (C112-1940)
Insulating Mouldings (C121-1940)

Emergency Standard for Aircraft Material

Plywood (E D804-1940)

Canada

Welded Genuine Wrought-Iron Pipe (B62-1940)
Copper and Brass Pipes, Standard Sizes (B64-1940)
Copper Water Tubes (B66-1940)
Pull-Off Plugs for Electro-Thermal Appliances (C22.2-No. 57-1940)
Insulated Power Cable and Paper-Insulated Lead-Covered Cable (C68 and C68A-1940)

Denmark

Round, Loose Flanges U for Bordered Tubes, Tn 2, 5, Dn 50-400 (640, Sheet 1) Tn 2, 5, Dn 450-2000 (640, Sheet 2) Tn 6, Dn 50-1000 (641) Tn 10, Dn 50-800 (642)
Flanges with Recess and Raised Face for Flat Joints, Tn 10-100, Dn 10-1000 (650)
Flanges with Recess for Round-Rubber-Joints, Tn 10-100, Dn 20-350 (654, Sheet 1) Tn 10-100, Dn 375-2000 (654, Sheet 2)
Flanges with Recess and Raised Face for Joints Tube to Tube, Tn 64-100, Dn 10-300 (657)
Flat-Joints for Flanges without Recess, Tn 2, 5-40, Dn 10-300 (660, Sheet 1) Tn 2, 5-40 Dn 325-2000 (660, Sheet 2)
Flat-Joints for Flanges without Recess, Special Performance, for Hydraulics, Tn 16-40, Dn 450-1600 (661)
Flat-Joints for Flanges with Recess and Raised Face, Tn 10-100, Dn 10-1000 (663)
Round-Rubber-Joints, Tn 10-100, Dn 20-2000 (665)
Seamless Joint-Rings for Flanges with Joint Tube to Tube, Tn 64-100, Dn 10-300 (667)
Seamless Steel Tubes and Welded Threaded Pipes, Technical Conditions of Delivery (670)
Lapwelded Steel-Tubes and Fittings; Technical Conditions of Delivery (690)

Great Britain

Aluminum Bars Containing Small Proportions of Copper and Zinc for General Engineering Purposes (War Emergency Standard replacing 2L 32—Aluminum Bars) (918-1940)

Method for the Biological Assay of Vitamin D_3 by the Chick Method (911-1940)

Great Britain—(Continued)

Oils, Thinners, Driers, and Extenders for Paints, including British Standards 925-1940 for Oil (Linseed Oil Base) and 926-1940 for Additional Extenders (925-1940)
Pigments: White, Black, and Colored for Paints, including British Standards 927-1940 for Alternatives for Lead and Zinc Chromes and 928-1940 for Alternatives for Brunswick or Chrome Greens and Green Oxides of Chromium
Ready Mixed Paints, Priming Paint, Undercoating Paints, Finishing Coat Paints—Oil Gloss (929-1940)
Method of Carrying Out a Field Test for Light Output of Sub-Standard Cinematograph Projectors (930-1940)
Loco-Type Multitubular Boilers (931-1940)
Brass Gravity Die-Castings (932-1940)

Revised British Standards

Flameproof Enclosure of Electrical Apparatus for Power and Lighting Plant (229-1940) *Supersedes 229-1929*
Galvanized Mild Steel Cisterns, Tanks, and Cylinders (417-1940) *Supersedes 417-1936*
Rubber Shock Absorber Cord (5F 16)
Light Elastic Cord for Parachutes, W/T Instruments and Aerial Suspensions (3F 51)
Hard Drawn Phosphor-Bronze and Phosphorus Deoxilized Bronze Tubes (2T 52)
Machine Cut Gears—Helical and Straight Spur (436-1940)
Oxy-Acetylene Welding in Mild Steel (693-1940)
Steel Tubes and Tubulars, Light Weight and Heavy Weight Qualities (789A-1940)

British Air Raid Precautions Standards

Simple Portable Standard of Brightness (BS/ARP 52)

Revised British Air Raid Precautions Standards

Gauges for Checking Low Values of Illumination—0.001 to 0.2 Foot Candle (BS/ARP 30)
Stirrup Pumps (BS/ARP 33)

Hungary

Keramitko—Briques ceramiques pour paves (37)
Falburkolati csempe—Carreaux de fayence (53)
A szabvanyokban elofordulo faanyagok elnevezese es azok ertelmezese—Nomenclature des bois et definitons (43)
J-szelveny—Profiles—Fers a J (320)
T-szelveny—Profiles—Fers a T (324)
I-szelveny—Profiles—Fers a I (325)
U-szelveny—Profiles—Fers a U (326)
Egyenloszaru L-szelveny—Profiles—Cornieres a ailes egales (328)
Egyenlotlenszaru L-szelveny—Profiles—Cornieres a ailes inegales (329)
Hajokotelek, Kenderkotelek, Szerkezet, meretek, sulyok, szakitoerok-Cordage, Cables en chanvre, Construction, Dimensions, Poids, Charge de rupture (371)

The above standards are available only in the language of the country from which they were received.

Courtesy Soap and Sanitary Chemicals.

Here toilet soap is cut and pressed into shape.

ASTM Soap Specifications and Tests Help Buyers, Tend to Lower Price

Specifications and methods of test for many types of soap are being prepared by ASTM Committee D-12

by H. P. Trevithick[1]

Chairman, ASTM Committee D-12 on Soaps and Other Detergents

A COMPREHENSIVE standardization program for soap—one of those common, everyday materials which are seldom considered in the light of standards except perhaps by manufacturers or by industrial or institutional buyers who must provide it in huge quantity lots—has now resulted in eight standard specifications and three standard methods of test approved by the American Society for Testing Materials. In addition, ten tentative specifications and two tentative methods of test, as well as a tentative standard for terms relating to soaps and other detergents, are now in the preliminary stage before final acceptance as standards.

Where these standard specifications are used, it is certain that commercial items, that is, items of regular manufacture, will be purchased, and hence manufacturers can give the lowest prices because of large production. Where special specifications are prepared and used, costs usually run much higher, due to changes in composition, special packing, low volume of production, etc. It frequently happens that special specifications require the manufacture of just enough product to fill the particular order, thus increasing the cost very materially.

All soaps tend to gain or lose moisture content on standing, and very frequently shipments show

[1] Chief Chemist, New York Produce Exchange, New York.

a considerable loss of weight upon arrival at destination. Buyers who are not familiar with this material are apt to draw erroneous conclusions (whereas actually the commodity has only dried out in transit and all the soap value shipped has been received) and have made deductions for loss in weight. To protect both buyer and seller, a purchase clause and formula have been included in the specifications to cover such changes in moisture content. This clause also prevents the buyer from charging for more weight than he actually shipped, regardless of the calculations from the formula.

Soap and Alkali Types

Industrial Bulk Soaps

- Solid
- Bar
- Flake
- Granulated, Powdered, Bead, Special Forms
- Built
- Soap Powder
- Scouring Powder and Cleanser

Toilet Soaps

- Milled Toilet Soap
- Floating Soap
- Hard Water Coco
- Pumice
- Liquid
- Bead, Granulated, or Powdered

Miscellaneous

- Liquid (Floor)
- Paste Potash Soaps

Synthetic Detergents

- Paste
- Flakes
- Powdered, Granulated, or Beads
- Liquid

Alkalis

- Borax
- Sodium Carbonate
- Sodium Bicarbonate
- Modified Soda
- Sodium Silicates (various ratios)
  - Meta
  - Sesqui
  - Ortho
- Sodium Phosphates
  - Tri Sodium
  - Tetra Pyro
- Caustic Soda
- Specialty Mixtures

The field covered by the ASTM Committee D-12 on Soaps and Other Detergents, which prepared these standards, includes not only supplies for ordinary laundry purposes, but also materials suitable for hospital uses, where the antiseptic qualities of soaps are also of interest. In addition, the cleaning of all types of building surfaces and of all types of transportation equipment is of direct concern to this committee. In such a comparatively simple operation as washing dishes, there is a tremendous difference between the material required by the housewife for a few dishes, considering very seriously the effect of the cleansing material on the hands, and that required by large hotels and restaurants, where power washers are used, and the hands do not come in contact with the cleanser.

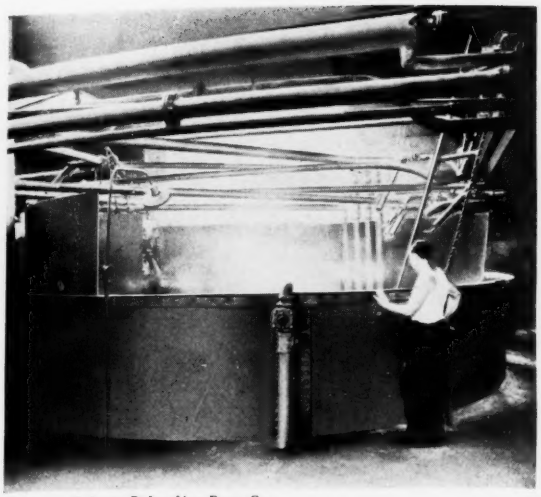
The uses of soap are varied. Its first use is in the home, as toilet and laundry soaps, and in power laundries. It is also used industrially in many ways. The textile industry uses it for scouring, boiling off, fulling, etc. It is used in insecticides to dilute the solution and to make the insecticide adhere to the plants. It is used in cosmetics, tooth paste, creams, shampoos, and emulsions. It is also used in wire drawing, in the manufacture of cup greases and lubricants, etc. Altogether over 3,000,000,000 lb are produced in the United States alone.

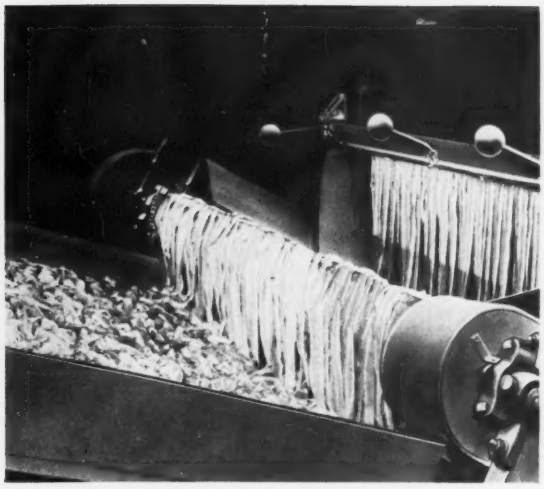
Includes Different Types of Soaps

Soaps and other detergents, all covered by the work of ASTM Committee D-12, are those materials which are used for cleaning purposes where the cleaner is used in a liquid medium. These include not only soaps, as such, in all their infinite varieties and forms, but also the caustic lyes, the alkali carbonates, silicates, borates and phosphates, and also a large group of commodities such as sulfonated or soluble oils, sulfated alcohols, etc. It also includes the soaps and other detergents used in dry cleaning and the "pickling" acid liquors used in cleaning steel plates, etc., before tinning or enameling.

Soaps are the products formed by saponifications or neutralization of fats, oils, waxes, rosins, or their acids with organic or inorganic basis. All of these materials are suitable to be used in their original form for the manufacture of soap, or they can be changed into their fatty acids, as for instance by the Twitchell process, and the fatty acids alone used for soap production.

"Bases" are organic or inorganic. Any metallic hydroxide will make "soap" with fatty acids, but most of them are insoluble in water. The bases usually used in soap making are the ones making water-soluble soaps. Of most importance





Courtesy Colgate-Palmolive-Peet Co.

(Top). Huge soap kettle charged with one-quarter million lb of olive, palm, and coconut oils, which are boiled with caustic soda to form soap and glycerine. *(Top right).* Hot soap passes over cooling roll, and is then scraped from roll in thin ribbons before entering drying chamber. *(Right below).* Discharge end of soap dryer. Ribbons have been broken into chip form and moisture reduced to about 14 per cent.

are sodium hydroxide which makes the normal or hard soaps, and potassium hydroxide which makes soft soaps. The carbonates of these two metals can also be used—usually with fatty acids, although they can be used with some oils.

Soaps formed by the alkaline earths, lime, and magnesia are water insoluble and form the familiar scum on "hard" water when soda soaps are used.

The heavy metals form soaps which are used for a variety of purposes. Aluminum soaps are used in polishing materials, in inks and paints, and for waterproofing textiles. This soap, together with magnesium, zinc, lead, and other metallic soaps are used for thickening lubricating oils. Zinc stearate is used extensively in face powders.

Ammonia, ethanolamine and triethanolamine soaps are used extensively as dry-cleaning soaps and in textile soaps, cosmetics, and others. They are excellent emulsifiers for oils, waxes, etc.

The ASTM authorized a study of the need of a standardization program for soap in 1934, after many requests for specifications from laundry owners' associations, hospitals, railroads, and others. After studying the problem for two years, in 1936 the ASTM organized Committee D-12 on Soaps and Other Detergents. The personnel of this committee consists of representatives of the National Bureau of Standards and other Government departments, leading producers, and many consumers of soaps and alkali detergents, and national authorities on the general subject of detergency. Advice and assistance have been obtained from many dependable sources not directly listed as members of the committee. The American Oil Chemists Society is officially represented on the committee and the extensive work carried out by that organization has been very helpful in furthering the work of Committee D-12, particularly in the establishment of methods of chemical analyses.

The committee has presented to the Society in a relatively short time a number of specifications for soaps and other detergents as well as methods of analyses of soap, soap products, of special detergents, and of sulfonated and sulfated oils, together with definitions relating to the terms used.

The table on page 68 showing a classification of soaps and other detergents is not complete but it will give an idea of the forms in which these products reach the market, for many of which Committee D-12 has prepared or is preparing standard specifications.

In most instances the development of an actual tangible product precedes the development of a specification for that product. Of course, before the specification can be written it is necessary to make chemical and physical tests to determine the characteristics of the product and to lay the foundation for the specifications. For that reason, it is highly essential for anyone working with, or interpreting, specifications to have a knowledge of the chemical characteristics or chemical analysis and the physical properties or physical examination of the product or products under consideration.[2]

Committee D-12 has already established standard test procedures for a number of the determinations referred to in this Laboratory Report, and based upon these has developed standard specifications covering a wide range of products as indicated in the accompanying list. The specifications themselves appear in the *ASTM Book of Standards.*

The committee also has under consideration the following proposed specifications and methods:

Proposed Specifications:

Low Titer Soaps
Detergent Soap Powder
Red Oil Soap
Liquid Soaps
Grit Cake Soap
Scouring Powders

Proposed Methods:

Sampling and Analysis of Tetrasodium Pyrophosphate
Sampling and Analysis of Sodium Orthosilicate

One of the sections of Committee D-12 has concentrated all its work on types of detergents other than soap such as the carbonates, hydroxides, phosphates, and silicates of the alkalis. Another section has devoted its efforts to the sulfated and sulfonated detergents, etc. The committee has written specifications and methods of

[2] To interpret analyses and specifications, it is necessary to have some knowledge of the chemical terms applying to the analyses of soaps and soap products. The meaning of the terms appearing on a typical analysis form are reviewed and explained in a more comprehensive technical article by Mr. Trevithick in the *ASTM Bulletin*, December, 1940.

Specifications and Methods of Test for Soap Developed by ASTM Committee D-12

Standard Specifications:

D 455 – 39 Milled Toilet Soap
D 456 – 39 Caustic Soda
D 457 – 39 Modified Soda (Sesquicarbonate Type)
D 458 – 39 Soda Ash
D 496 – 39 Chip Soap
D 497 – 39 Ordinary Bar Soap
D 498 – 39 Powdered Soap (Nonalkaline Soap Powder)
D 499 – 30 White Floating Toilet Soap

Tentative Specifications:

D 533 – 39 T Built Soap, Powdered
D 534 – 39 T Soap Powder (Alkaline Soap Powder)
D 535 – 40 T Palm Oil Solid Soap (Type A, Pure; Type B, Blended)
D 536 – 39 T Palm Oil Chip Soap
D 537 – 39 T Sodium Metasilicate
D 538 – 39 T Trisodium Phosphate
D 592 – 40 T Olive Oil Solid Soap (Type A, Pure; Type B, Blended)
D 593 – 40 T Salt-Water Soap
D 594 – 40 T Sodium Sesquisilicate
D 595 – 40 T Tetrasodium Pyrophosphate (Anhydrous)

Standard Methods:

D 460 – 39 Sampling and Chemical Analysis of Soaps and Soap Products
D 501 – 39 Sampling and Chemical Analysis of Special Detergents
D 502 – 39 Test for Particle Size of Soaps and Other Detergents

Tentative Methods:

D 500 – 38 T Chemical Analysis of Sulfonated and Sulfated Oils
D 501 – 40 T Sampling and Chemical Analysis of Special Detergents (Trisodium Phosphate, Sodium Metasilicate and Sodium Sesquisilicate, Carbon Dioxide in Caustic Soda)

Tentative Definitions:

D 459 – 40 T Terms Relating to Soaps and Other Detergents

analysis for caustic soda, soda ash, modified soda, sodium metasilicate, sodium sesquisilicate, and trisodium phosphate. Specifications and methods of analysis are at present in process of formulation for tetrasodium pyrophosphate and sodium orthosilicate.

Methods of testing the sulfated and sulfonated detergents have also been drawn up but specifications for these have not as yet been prepared although the committee has been studying this problem for three years.

One of the subcommittees is considering the preparation of a monograph covering the types, properties, and uses of the alkali detergents and soaps and hopes to be in a position to issue such a pamphlet within the next year or two.

ASA Considers National Standards For Fastness of Color in Textiles

Tests and classification of the fastness of color in dyed and printed cotton, dyed and printed silk, and in dyed wool are included in standards recently submitted to the American Standards Association by the American Association of Textile Chemists and Colorists. These standards cover fastness of color in each type of material not only in various processes connected with the manufacture and finishing of the cloth but also in laundering and caring for it in the home. The standards are:

Cotton—

- Fastness to laundering and domestic washing of dyed or printed cotton
- Fastness to fulling of dyed cotton against white cotton, silk, and wool
- Fastness to stoving

Silk—

- Fastness to washing of dyestuffs on silk
- Fastness to laundering and domestic washing of dyed or printed silk
- Fastness to fulling of dyed silk
- Fastness to degumming of dyed silk
- Fastness to stoving of dyed silk
- Fastness to peroxide bleaching of dyed silk

Wool—

- Fastness to laundering and domestic washing of dyed wool material
- Fastness to fulling, scouring, and mill washing
- Fastness to wet and dry heat (sponging and pressing)
- Fastness to stoving

At its meeting February 25, the Advisory Committee on Ultimate Consumer Goods recommended that a project on Fastness of Colored Textiles be initiated by the ASA to take care of these standards and that a sectional committee be organized. The ACUCG recommended that the work of the proposed committee might cover "development of standard methods for determining fastness of colored textiles to color-destroying agencies, and the evaluation and interpretation of data obtained from such tests."

A subcommittee of the ACUCG which had studied the subject reported to the ACUCG that in its opinion a sectional committee under ASA procedure would be the most effective method of obtaining widespread acceptance and adoption as American Standard of the standards submitted by the American Association of Textile Chemists and Colorists. Such a committee would also provide a continuing forum for revisions and extensions of approved standards, the subcommittee explained.

Reports on Building Materials Show Results of Research

New publications in the series of reports on Building Materials and Structures published by the National Bureau of Standards have just been received by the American Standards Association as follows:

- Effects of Wetting and Drying on the Permeability of Masonry Walls, by Cyrus C. Fishburn, BMS55
- Properties of Adhesives for Floor Coverings, by Percy A. Sigler and Robert I. Martens, BMS59
- Roofing in the United States—Results of a Questionnaire, by Leo J. Waldron and Hubert R. Snoke, BMS57
- Survey of Humidities in Residences, by Thomas D. Phillips, BMS56

The program of research on building materials and structures carried on by the National Bureau of Standards was undertaken with the assistance of the Central Housing Committee. This committee is an informal organization of governmental agencies concerned with housing construction and finance, which is cooperating in the investigations through a committee of technicians.

Reports on Building Materials and Structures may be obtained from the Superintendent of Documents, Washington, D. C. at ten cents each.

ASA Starts Pension Plan For Its Employees

by Edmund A. Prentis

Past-President, American Standards Association

IN the last hundred years not only have science and industry advanced with great strides but the country's attitude on social problems and social security has also been transformed. Reflecting this present-day feeling of social responsibility a retirement-income plan to give employees of the American Standards Association the protection which is not available to them under the Government's Social Security program was voted by the ASA Board of Directors at its meeting December 11, to take effect December 31, 1940. The American Standards Association, as a nonprofit organization, does not come under the Federal Security Act.

After a careful check by the organization's counsel, when it became certain that the ASA could not be included in the Federal program as at present set up, the ASA Board of Directors authorized a study of private pension plans. The Finance Committee and the staff studied the subject thoroughly over a period of several months, and spent a great deal of time and effort in consultation with insurance specialists to work out the most satisfactory arrangement from the standpoint of both the Association and the employees.

The plan has been worked out with the idea that the Association will devote the same amount that it would cost if it were under the State and Federal Social Security programs. This cost will be four per cent of the payroll, 2½ per cent of which will be for the basic pension plan, and 1½ per cent supplementary to provide older employees who have been longer in ASA service with the minimum pension agreed upon. Employees who participate in the plan will contribute an equal amount for the "basic" plan.

May Start at 65

It is planned that the pension will begin at age 70, but it may begin as early as 65 if the employee prefers to take the smaller monthly payment which earlier retirement would provide. The minimum "basic" pension provided at 70 is $30 per month or 12½ per cent of present salary. An individual annuity contract has been purchased from a life insurance company for each participant. The contract is issued in the name of the participant, but is to be held by the ASA Pension Committee, until the participant retires. The Pension Committee is made up of a member of the ASA Board of Directors appointed by the Board; the secretary of the ASA; and a woman employee elected by the participating employees. Edmund A. Prentis has been elected by the Board; and Isabelle Anderson, office manager, by the staff. P. G. Agnew, secretary of the Association, is the third member.

If an employee dies before retirement, the total of all premiums paid by the employee and ASA, or the cash value of the contract if greater, will

It is particularly appropriate that the article describing the new ASA pension plan be written by Edmund A. Prentis, past-president of the American Standards Association. The plan was worked out and accepted by the Board of Directors during Mr. Prentis' term of office, and Mr. Prentis, himself, gave a great deal of his time and effort to developing the best possible arrangement for the employees as well as for the Association. His interest in it was expressed not only in the work he put into completing it but also in a more concrete form.

The ASA staff unanimously adopted a resolution expressing its appreciation to Mr. Prentis personally and to the Board of Directors, for the way in which the plan was worked out and put into effect.—EDITOR.

be paid to the beneficiaries selected by the employee. If he ceases to be employed by the ASA, his annuity contract will be turned over to him. He may either continue the policy, let it remain as a paid-up annuity, or collect the cash value. Whatever dividends and interest have accumulated will be added. Until his retirement the individual participating may exercise the various rights and options of the contract only with the consent of the pension committee, except that he may change his beneficiaries or method of settlement without that consent.

The ASA Board of Directors voted that participation in the plan should be voluntary. They are gratified that every eligible member of the staff except two, twenty-seven in all, decided to participate. The Board was pleased to receive from the entire staff a resolution of appreciation for the way in which the plan had been worked out.

Provision has been made that the plan may be reviewed after two years in order to make any changes that may be needed. This provision was included particularly in view of the possibility that the present Social Security Law might undergo change.

Institute of Steel Construction Becomes ASA Member-Body

The American Institute of Steel Construction has joined the American Standards Association as a Member-Body with the privilege of representation on the ASA Standards Council. Through this representation the Institute will have a voice in all decisions on approval of standards, initiation of projects, and approval of committee memberships. F. H. Frankland, chief engineer, of the Institute, has been named as its representative on the Council, with Paul Leon Price, assistant to the executive vice-president, as his alternate.

The Institute was founded in 1921 to further the interests of structural steel in its fabrication, erection and use, through a constructive cooperative program. Its membership is limited to manufacturers engaged in the fabrication and erection of structural steel. Activities of the Institute are indicated in the names of its active committees, which include aesthetic design of steel bridges, bonding legislation, code on standard practice, cost accounting, elevated highways, extended uses of steel, specifications, statistics, public relations, and uniform contracts. In addition, the Institute carries on a technical research program, with the help of Lehigh and Columbia Universities, Swarthmore College, and the National Bureau of Standards. Some of its projects concern such problems as cleaning and painting of steel, stress distribution in steel rigid frames, tests on plate girders, stress distribution in short columns and perforated cover plates. The Institute also takes an active part in the work of technical committees of the American Society for Testing Materials, the American Society of Civil Engineers, the American Welding Society, and is represented on the Subcommittee on Structural Steel of the American Standards Association Committee on the Building Code.

Officers of the American Institute of Steel Construction are: C. G. Conley, president; Clyde MacCornack, first vice-president; Edward K. Klingelhofer, second vice-president; T. R. Mullen, treasurer; Robert T. Brooks, executive vice-president; W. G. Iden, secretary; F. H. Frankland, chief engineer; T. H. Hendrix, director of statistics.

Correction

A mistake in one of the references to the tolerance for hole H4 in the second installment of Tolerances for Cylindrical Fits by Dr. John Gaillard has been called to our attention. The error occurs in line 14, column 1, page 41 of our February issue. In this line the tolerance on hole H4 should be given as "1.0000, plus and minus 5 tenths" rather than "plus and minus 4 tenths" as it now appears. The error was corrected before the pamphlet which includes all four installments of the article was published. The pamphlet is now available from the ASA at 25 cents per copy.

ASA Meetings

Meetings of the ASA Board of Directors and Standards Council are scheduled for the year 1941 as follows:

Board of Directors	*Standards Council*
Wednesday, March 26	Thursday, April 10
" Sept. 17	" Sept. 18
" Dec. 10	" Dec. 10

The December 10 meeting will be the Annual Meeting of the American Standards Association and will include a joint luncheon meeting of the Board and Council to which ASA Members will also be invited.

Tolerances for Cylindrical Fits*

by John Gaillard

Mechanical Engineer, American Standards Association

III. Control of Fits

In manufacturing practice, fits are commonly controlled by means of gages and measuring devices. This control presents a comprehensive problem by itself and we can touch here only on the principles by reviewing the process of limit gaging.

Limit Gages

By a limit gage we understand a measuring tool that physically represents either one, or both, limits of a hole or shaft. More particularly, we think here of Go and Not Go plug gages for checking holes, and Go and Not Go snap gages for checking shafts.

To determine whether gages are accurate enough when they are new and whether they are still accurate enough after having been used for some time, they must be checked against master gages or reference blocks, such as Johansson or Hoke blocks. These masters or blocks again may ultimately be checked against the standards kept at the National Bureau of Standards, Washington, D. C. Comparison by means of lightwave measurement permits extreme accuracy. For example, in comparing meter bars kept in the several countries with the prototype kept in a vault near Paris, the error was found to be less than one part in ten million. This is equivalent to a difference of one inch in about 158 miles, or the distance from New York to Schenectady.

Unit of Length; Inch-Millimeter Ratio

In this country and Great Britain, allowances and tolerances are commonly given in decimal fractions of an inch, usually "thousandths" (or "mils", as the British say) or "tenths". In metric countries, it is customary to use microns (one micron equals .001 millimeter, or about .00004 inch).

This difference in unit of length brings up the question of the ratio between the inch and the millimeter. According to the legal definitions of the yard and the meter used in the United States and Great Britain, respectively, the legal inch-mm ratio differs slightly, in these two countries. In the U. S., the ratio is about 25.40005, as against about 25.39998, in Great Britain. The difference of about one part in 363,000 between these ratios is negligible in shopwork, but not in accurate measurements and gaging practice. (For example, the tolerance on the finest grade of Johansson blocks is given as plus and minus one part in 500,000.) The same statement is true for the difference between the American or the British legal ratio, and the rounded value, 25.4.

The American and British industries have solved this problem by adopting for their own use the ratio: one inch equals 25.4 mm.[3] This ratio has now acquired the status of a world standard. Also, a bill is before Congress to legalize the ratio 25.4 through a revision of the definitions of the fundamental units of length in terms of lightwaves (Somers bill).

Reference Temperature

To maintain high accuracy in dimensioning, we must know at what temperature the work and the gages are supposed to have their specified size—always, within certain limits. The temperature agreed on for this purpose is called the *reference temperature*. Steel expands and contracts under the influence of temperature changes at the rate of about 6 parts in one million, for each degree Fahrenheit. Therefore, the increase in length of a steel part caused by a temperature rise of one degree F is about three times the plus tolerance on the finest grade of gage block (2 parts in one million).

The reference temperature of gaging practice specified in the ATS B4a—1925 is 68F or 20C. This value has now been adopted all over the world. Uniformity in this respect has been brought about by the ISA (International Standards Association) which is also responsible for the general adoption of the inch-mm ratio 25.4. Agreement on these two points has been invaluable because it permits all countries to speak the same language in regard to industrial measurements of length. Until a few years ago, difference in practice caused great confusion among

[3] American Standard Practice for Inch-Millimeter Conversion for Industrial Use (B48.1-1933) and British Standard Conversion Tables (BS 350-1930).

* This discussion was originally presented as an informal talk before the Industrial Standards Group of the Industrial Management Council, Rochester, N. Y. It is published in four instalments of which this is the third. A review of national and international systems of fit (April) will complete the series. The entire article is available in pamphlet form at 25 cents.

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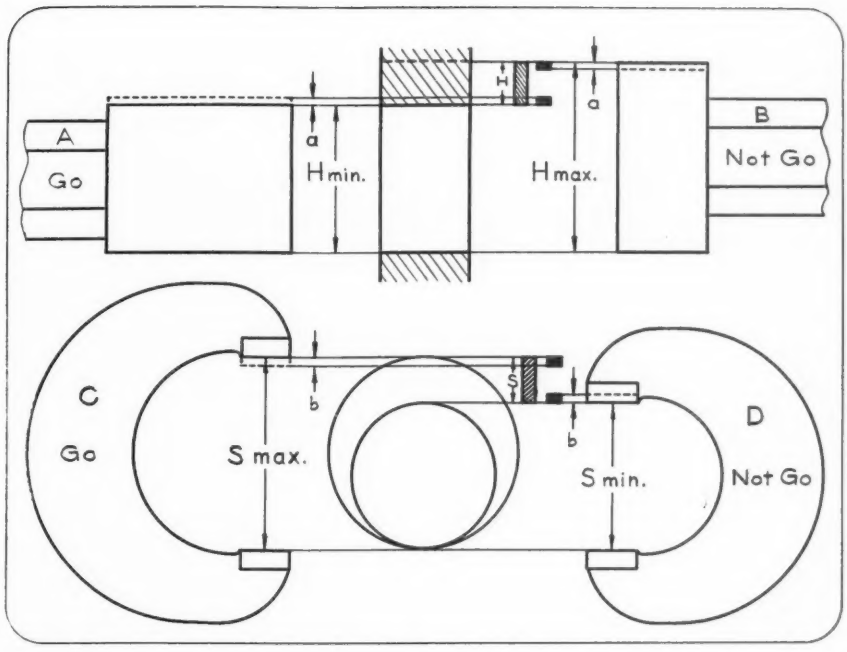

Fig. 9. Manufacturing tolerances on plug and snap gages.

engineers and gage makers. The U. S. and Continental Europe, except France, had adopted 68F as the reference temperature. In France, it was 32F and in Great Britain, 62F. This variety, combined with different inch-mm ratios and, also, different practices of rounding off conversion values, has caused many engineers a lot of trouble. All this has now been set straight.

Permissible Variations in Gages

Since a gage is a manufactured product itself and cannot be made to a mathematically exact size, it must be given a tolerance. Also, a gage is subject to wear and we must, therefore, decide to what extent it is permitted to get worn before being discarded or adjusted.

At the present time there is no American Standard governing these two points in detail. The committee that developed the ATS B4a—1925 considered the question of gage tolerances and wear, but did not submit a final proposal to the ASA. However, it laid down a principle in the ATS, as follows:

> "The extreme sizes for all plain limit gages shall not exceed the extreme limits of the part to be gaged."

Gage Tolerances

To visualize the implications of this principle, we shall first try to get a picture of the function of a gage.

In the upper diagram, Fig. 9, we see a hole and the Go and Not Go plug gages designed to check it. The Go gage **A** must have a diameter such that it will enter the smallest acceptable hole, **H min**. The Not Go plug gage **B** must be so large as to be refused by the maximum permissible hole, **H max**. Any hole that admits gage **A**, but refuses gage **B**, lies within the hole tolerance **H**.

The lower diagram, Fig. 9, shows in a similar way how a shaft is checked for size by means of a Go and a Not Go snap gage representing the high limit **S max** and the low limit **S min** of the shaft, respectively. Here, any shaft over which the snap gage **C** will pass and over which the snap gage **D** will not pass, lies within the shaft tolerance **S** and, hence, is acceptable.

Ideally, the gages should represent the limits that they are intended to check, *exactly*. Practically, we have to give a tolerance on a gage as shown in Fig. 9. Here, each of the two plug gages is given a tolerance **a** on its nominal diameter—that is, on the dimension which represents the limit to be checked by the gage. Accordingly, a new Go gage is to be held within the limits (**H min** + **a**) and **H min,** and the Not Go gage is to be held within the limits **H max** and (**H max** — **a**). With this set-up, a hole accepting the Go gage **A** and refusing the Not Go gage **B** will lie within the tolerance **H**, independent of the variations in size of the gages within their own tolerance **a.** In other words, the gage variations cannot lead here to the acceptance of a hole lying outside its own limits. On the other hand, the deviations of the gages from their nominal sizes reduce the amount of tolerance on the hole actually available to the shop. As it is sometimes put: the gage tolerances "rob" the shop of

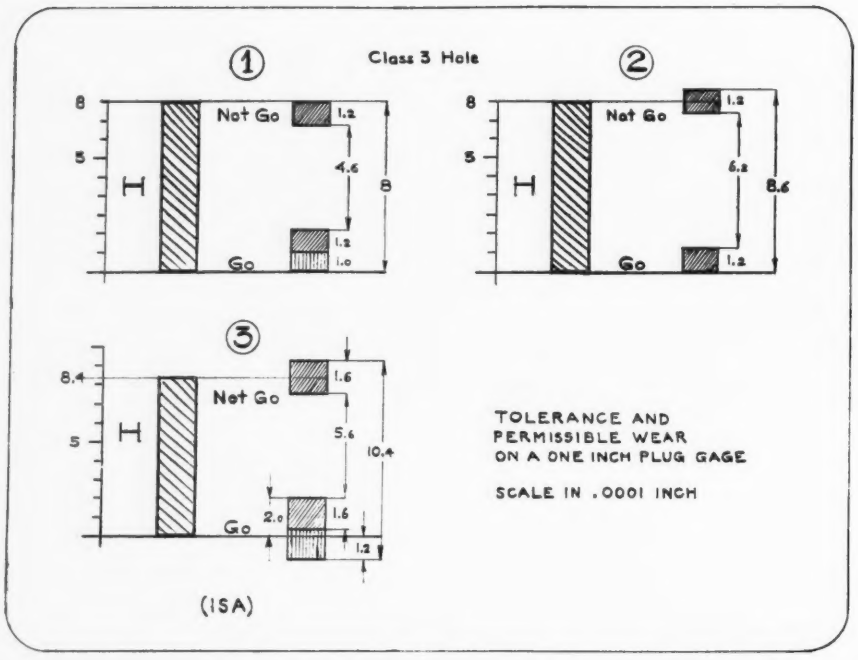

Fig. 10. Different methods of specifying gage tolerance and permissible wear

part of the tolerance on the work. The maximum to which this reduction may amount is **2a**, in Fig. 9.

A similar reasoning may be applied to the gaging of shafts. In Fig. 9, the Go snap gage **C** and the Not Go snap gage **D** are given a tolerance **b**. Therefore, the Go gage is held within the limits **S max** and (**S max** — **b**) and the Not Go gage within the limits (**S min** + **b**) and **S min**. Any shaft passed by a set of Go and Not Go snap gages held within these limits has an acceptable size. But, here again, variations in the sizes of the snap gages from their nominal dimensions (that is, from the limits of the work) will reduce the shaft tolerance actually available to the manufacturer by a certain amount the maximum of which is **2b**.

It appears, then, that to comply with the rule laid down in the ATS B4a—1925, we have to sacrifice some of the manufacturing tolerance. A similar sacrifice must be made if we wish to make provision for *wear* of the gages, as will be illustrated by the next diagram, Fig. 10.

Gage Wear

In Fig. 10, diagram 1 represents the tolerance **H** on a one-inch hole, value 8 tenths. To the right of **H** is represented the tolerance of 1.2 tenths given on the Go plug gage. This gage tolerance lies one tenth above the Go limit. Therefore, while the new Go plug gage must have a size falling within its tolerance of 1.2 tenths, it may wear down through the vertically cross-hatched zone of one tenth, until it has reached the Go limit of the hole (1.0000 inch). By wearing down further, the gage would become too small and accept undersize holes.

The Not Go plug gage, diagram 1, Fig. 10, is given the same tolerance of 1.2 tenths as is given the Go gage. To keep its actual size as closely as possible to the Not Go limit of the hole, the gage tolerance is given here as a minus value measured from this limit. Wear is supposed to be negligible, for the Not Go gage.

In diagram 1, Fig. 10, the total tolerance on the product (8 tenths) may be reduced to 4.6 tenths by the gage tolerances, as indicated.

Other Approaches to Tolerance and Wear Problem

Diagram 2, Fig. 10, shows another system of giving gage tolerances. This is not in accordance with the principle laid down in the ATS B4a—1925, but since it represents the practice of some American gage manufacturers, it may well be mentioned. Here, the tolerance of 1.2 tenths on the Go plug gage is given as a plus tolerance on the Go limit of the hole, with no provision for gage wear. The tolerance of 1.2 tenths on the Not Go plug gage is given here as a bilateral tolerance of plus and minus 0.6 tenth on the Not Go limit of the hole.

In diagram 2, Fig. 10, the hole may exceed its Not Go limit by as much as 0.6 tenth and yet will be acceptable. The advantage of this arrangement is that the tolerance on the hole actually available to the manufacturer is never less than 6.2 tenths, as against 4.6 tenths, in diagram 1.

The set-up according to diagram 3, Fig. 10, represents the practice widely followed in Con-

Table I. Plug and Ring Gage Tolerance (Adopted by Gage Manufacturers Association)

Tolerance on plug gages should be governed by the limits of the part to be gaged. The general practice of gage manufacturers where no tolerance has been specified is to use 10% of the difference between Go and Not Go members.

Ring gage tolerance should be specified to suit the job.

The following is a list of symbols together with tolerances for their respective size ranges.

XX—Precision lapped (plugs or male masters only)

X—Precision lapped plugs or rings.

Y—Lapped plugs or rings

Z—Ground and polished (grinding marks may be in evidence)

ZZ—Ground only (for rings only)

Gage limits should always be indicated by use of symbol letters.

ABOVE	TO AND INCL.	(MALE GAGES ONLY) XX	X	Y	Z	(RING GAGES ONLY) ZZ
.029—	.825	.00002	.00004	.00007	.00010	.00020
.825—	1.510	.00003	.00006	.00009	.00012	.00024
1.510—	2.510	.00004	.00008	.00012	.00016	.00032
2.510—	4.510	.00005	.00010	.00015	.00020	.00040
4.510—	6.510	.000065	.00013	.00019	.00025	.00050
6.510—	9.010	.00008	.00016	.00024	.00032	.00064
9.010—	12.010	.00010	.00020	.00030	.00040	.00080

tinental Europe and adopted in the ISA System. The tolerance on the Go gage (1.6 tenths) lies slightly above the Go limit of the hole, thus leaving a narrow zone for gage wear until this limit is reached. However, the gage is permitted to wear still further, until its size lies 1.2 tenths below the Go limit of the hole. (The total wear of the gage is then at least 1.6 tenths.) The tolerance of 1.6 tenths on the Not Go gage is given as a bilateral tolerance—in the same way as in diagram 2.

In diagram 3, Fig. 10, the tolerance **H** (8.4 tenths) may be reduced, under the influence of gage variations, to as little as 5.6 tenths, but it may also be increased to as much as 10.4 tenths. In defense of the latter possibility—which goes against the rule laid down in the ATS—those advocating the system just described claim that it has the advantage of giving the gage a longer useful life. As to the fact that the work may exceed the limits set for it, the advocates of this system hold that no serious trouble is likely to result from it. They reason this way: "It is true that an undersize hole may be accepted if checked with a very much worn-down Go plug gage. In the same way, an oversize shaft may be accepted by an excessively worn-out snap gage. If such a hole and shaft happen to be combined, the resulting fit may be too tight. However, the chance that this will happen is so small that it may be disregarded in view of the advantages presented by the longer useful life of the gages."

This way of looking at the problem might be called the European way, as against the American way expressed in the ATS B4a—1925. In principle, there is no technical advantage to either system, but from a viewpoint of standardization, a choice must be made between the two.

Gage Specifications

No standard system of tolerances for fits is complete without specifications for gage tolerances and permissible gage wear. As mentioned before, the ATS B4a—1925 does not contain such specifications. However, it is interesting to note here that the Gage Manufacturers Association has adopted a table of plug and ring gage tolerances, see Table 1.

There are five grades of gage tolerances indicated by letter symbols, XX to ZZ. For gages with a nominal size of one inch, the tolerances corresponding to these grades are 3, 6, 9, 12, and 24 hundredthousandths of an inch. (Grade Z was assumed to apply to the one-inch plug gage represented in diagrams 1 and 2, Fig. 10.) The table does not give specifications concerning the location of the gage tolerance in respect to the tolerance on the work (hole or shaft).

The data on gage tolerances discussed here have no status as an American Standard, but it is evident that due attention should be given this matter now that the ATS B4a—1925 is being revised. The new American Standard, whatever this is going to be, must contain specifications for gage tolerance and permissible wear, if it is to be a complete and specific document.

(Part IV will appear in our April issue. The entire article is now available at 25 cents.)

Federal Specifications Recently Approved

The following Federal Specifications and Amendments have been approved by the Director of Procurement for government purchasing and become effective on the date following the title:

Acoustic materials: for plastic application. (Superseding SS-P-391) SS-A-111 Feb. 15, 1941

Adzes. (Superseding GGG-A-151) GG-A-151a Feb. 15, 1941

Asparagus: canned. (Supserseding JJJ-A-711) JJJ-A-711a Feb. 1, 1941

Bandages: plaster of Paris. (Superseding GG-B-101) GG-B-101a Feb. 15, 1941

Bowls, sponge: corrosion-resisting steel. (New) RR-B-616 Feb. 1, 1941

Brushes: scrubbing, deck. (Amendment 3) H-B-531 Mar. 1, 1941

Buckets (pail), hospital: corrosion-resisting-steel. (New) RR-B-761 Feb. 15, 1941

Dentifrice: tooth paste. (Superseding FFF-D-191) FFF-D-191a Feb. 1, 1941

Feathers. (Superseding C-F-151) C-F-151a Mar. 1, 1941

Gauze: plain. (Superseding CCC-G-101) CCC-G-101a Feb. 1, 1941

Ice cream: sherbets, and ices. (Amendment 1) EE-I-116a Feb. 1, 1941

Irrigators: corrosion-resisting-steel. (New) RR-I-681 Feb. 15, 1941

Jars, dressing: corrosion-resisting-steel. (New) RR-J-131 Feb. 15, 1941

Leather: artificial (upholstery). (Superseding KK-L-136) KK-L-136a Mar. 1, 1941

Lumber and timber: softwood. (Superseding MM-L-751a) MM-L-751b Mar. 15, 1941

Pipe: cement-asbestos. (New) SS-P-351 Mar. 15, 1941

Plumbing fixtures: (for) land use. (Superseding WW-P-541) WW-P-541a Mar. 1, 1941

Ribbons, typewriter. (Amendment 1) DDD-R-311a Feb. 1, 1941

Syringes: all-glass, Luer. (Superseding GG-S-921) GG-S-921a Feb. 1, 1941

Trays, instrument: corrosion-resisting-steel. (New) RR-T-636 Feb. 15, 1941

Tubing: rubber. (Amendment 1) ZZ-T-831a Mar. 15, 1941

Tubs, foot: corrosion-resisting-steel. (New) RR-T-771 Feb. 15, 1941

Urinals, male: corrosion-resisting-steel. (New) RR-U-691 Feb. 15, 1941

A revised list of all Federal Specifications has just been completed and made available.

The above specifications are for sale at five cents each from the Superintendent of Documents, Government Printing Office, Washington, D. C., except that on plumbing fixtures for land use WW-P-541a, and the new index which are priced at 15 cents each. Requests should be accompanied by cash, check, money order or coupons.

Westinghouse Adopts Informative Labels

A new descriptive label is being attached to all major appliances by the Westinghouse Electric and Manufacturing Company as a service to its customers, the company announced recently. The labels, which are to be attached to the 1941 models, are written in nontechnical terms, to give the structural and equipment facts about the various Westinghouse appliances.

The standard elements of these labels are:

First page—The name of the appliance; model name and number; list of specifications, features, and equipment; statement of purchaser's protection; and space for price.

Second and third pages—Details of how the appliance is made; constructional information; description of protective guarantee; brief description of how to care for it; and reference to recipe or instruction book.

Fourth page—What the appliance can do, and such operating facts as can be supported by test data; statement of the purpose of the label; and the Westinghouse signature.

New Policy Brings Standards Into ASA Highway Program

Action by the Executive Committee of the American Association of State Highway Officials brought the submittal of five specifications of the AASHO to the American Standards Association for approval early in February. The specifications were submitted as the result of adoption of a new policy by the AASHO recommended by its Committee on Standards as follows:

"Policies and specifications adopted by this Association by letter ballot by the States as Association standards will be transmitted to the American Standards Association with the recommendation that such policies and specifications be adopted as American Standards."

The specifications submitted by the AASHO which are now being considered by the American Standards Association are:

Sight distance for highways
Highway classification
Criteria for marking and signing no-passing zones on two-and three-lane roads
Highway types (geometric)
Intersections at grade

The Highway Traffic Standards Committee of the ASA is studying the specifications and will make recommendations to the ASA Standards Council concerning their approval.

Cheese Standards Established, Effective in April

Regulations covering definitions and standards for cheddar cheese, washed curd cheese, and colby cheese have been established under the Federal Food, Drug, and Cosmetic Act, according to the Federal Security Agency.

The definitions and standards are published in the Federal Register of January 9, copies of which may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at ten cents each.

Automobile Lubricating Oils Discussed in Letter Circular

The characteristics of automobile engine lubricating oils are discussed in Letter Circular 613 published by the National Bureau of Standards. Subjects covered in the mimeographed pamphlet are selection of oils, carbon residue and oxidation, SAE viscosities, pour point and flash point, color, specific gravity, contamination in use, changing crankcase oil, oil consumption, and oil characteristics.

Letter Circular 613 supersedes LC-407.

ASA Standards Activities

Approved Standards Available Since Publication of Our February Issue

A-C Power Circuit Breakers Proposed American Standard C37.4

Methods for Determining the Rms Value of a Sinusoidal Current Wave and a Normal Frequency Recovery Voltage Proposed Am Rec Practice C37.5

Schedule of Preferred Circuit-Breaker Ratings Proposed Am Rec Practice C37.6

Operating Duty for Standard and Reclosing Service Proposed Am Rec Practice C37.7

Rated Control Voltages Proposed Am Rec Practice C37.8

Test Code for Oil Circuit Breakers Proposed Am Rec Practice C37.9

(The above six standards on circuit breakers are available in one volume, price 60¢)

Allowable Concentrations of Carbon Monoxide American Standard Z37.1-1941 20¢

Allowable Concentrations of Hydrogen Sulfide American Standard Z37.2-1941 20¢

Allowable Concentrations of Carbon Disulfide American Standard Z37.3-1941 20¢

Allowable Concentrations of Benzene American Standard Z37.4-1941 20¢

Standards Approved Since Publication of Our February Issue

125 and 250 lb Cast-Iron Screwed Fittings (Revision of Am Tentative Standard B16d-1927) B16d-1941

Standards Now Being Considered by Standards Council for ASA Approval

Manhole Frames and Covers for Subsurface Structures A35.1

Keyways for Holes in Gears B6.4

Cast-Iron Pipe Flanges and Flanged Fittings, Class 250 (Revision of B16b-1928)

Gage Blanks CS 8-41 (Revision of American Standard B47-1933)

Safety Rules for the Installation and Maintenance of Electrical Supply Stations, Part I of the National Electrical Safety Code C2, Part I

Installation and Maintenance of Electric Utilization Equipment, Part 3 of the National Electrical Safety Code C2, Part 3

Electric Fences, Part 6 of the National Electrical Safety Code C2, Part 6

Protection of Structures Containing Inflammable Liquids and Gases—Part 3 of Code for Protection Against Lightning (From status as American Tentative Standard to American Standard) C5, Part 3

Commercial Standards for Sun Glass Lenses (CS 78-39; CS 79-39)

Hard-Drawn Copper Wire H4.2

Medium Hard-Drawn Copper Wire H4.3

Cotton Rubber Lined Fire Hose (Revision of American Standard L3-1935)

Body Sizes for Boys' Garments L11.1

Proposed American Recommended Practice for the Use of Explosives in Anthracite Mines M27

Northern White Cedar Poles 05.1

Western Red Cedar Poles 05.2

Chestnut Poles 05.3

Southern Pine Poles 05.4

Lodgepole Pine Poles 05.5

Douglas Fir Poles 05.6

(The above six standards in the Wood Pole group are under consideration as American Standards from status of American Tentative Standard)

Abbreviations for Scientific and Engineering Terms (Revision of Z10.i-1932)

Safety Code for Grandstands Z20

Public Approval and Certification Procedures Z34

70 mm Perforated (and Unperforated) Film for Other Than Motion Picture Purposes (Cutting and Perforating Standard) Z38.1.3

New Projects Being Considered

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